# CIVIL QUALITY CONSULTANTS & ENGINEERS

(Buildings Geo-Tech & Highway Materials Testing Laboratory)
An ISO 9001: 2008 Certified Company

JAS-ANZ
ISO 9001:2000 CERTIFIED


Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date : 26.05.2016

## GRADATION FOR GSB (CLOSE GRADED)
## IS : 2720 (Part - 4)

**Client** : **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

**Agency** : **Technical Manager (West),** KRIDL, Bangalore.

**Name of Work** : Asphalting to Main and Cross roads SMR Layout Thammish Garden, Venkateshwara Layout in Ward No.12, of Shettyhalli, BBMP, Bangalore.

**Date of Testing** : 26.05.2016

**Sample Source** : GSB, Mix plant Bangalore **Oven Dry Wt (gm) :** 10000

TABLE – 1

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Specified Limits |
|---|---|---|---|---|---|
| 75.0 | 0 | 0 | 0.00 | 100 | 100 |
| 53.0 | 862 | 862 | 8.62 | 91.38 | 80-100 |
| 26.50 | 2658 | 3520 | 35.20 | 64.80 | 55-90 |
| 9.50 | 1668 | 5188 | 51.88 | 48.12 | 35-65 |
| 4.75 | 1232 | 6420 | 64.20 | 35.80 | 25-55 |
| 2.36 | 1127 | 7547 | 75.47 | 24.53 | 20-40 |
| 0.425 | 968 | 8515 | 85.15 | 14.85 | 10-25 |
| 0.075 | 867 | 9382 | 93.82 | 6.18 | 3-10 |

**Remarks:** Satisfies MORTH Specifications as per Table 400-1, Grading I

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For CIVIL QUALITY CONSULTANTS & ENGINEERS

Authorised Signatory

AE-12
ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date : 30.05.2016

## GRADATION FOR WMM
## MORTH TABLE-400-11

Client : **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (west),** KRIDL, Bangalore.

Name of Work : Asphalting to Main and Cross roads SMR Layout Thammish Garden, Venkateshwara Layout in Ward No.12, of Shettyhalli, BBMP, Bangalore.

Date of Testing : 30.05.2016

Material Type : Wet Mix Macadam

Oven Dry.Wt 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Spec.Limits |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 163 | 163 | 1.6 | 98.4 | 95-100 |
| 22.4 | 3152 | 3315 | 33.2 | 66.9 | 60-80 |
| 11.2 | 2341 | 5656 | 56.6 | 43.4 | 40-60 |
| 4.75 | 1596 | 7252 | 72.5 | 27.5 | 25-40 |
| 2.36 | 1052 | 8304 | 83.0 | 17.0 | 15-30 |
| 0.600 | 725 | 9029 | 90.3 | 9.7 | 8-22 |
| 0.075 | 435 | 9464 | 94.6 | 5.4 | 0-8 |

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For CIVIL QUALITY CONSULTANTS & ENGINEERS

Authorised Signatory


Office & Laboratory : # 133, Bhuvaneshwarinagar, Dodda Basti Main Road, Bangalore - 560 056.
e-mail:civilqualityconsultants@gmail.com Ph: 080-23240644 / Mob: 8553518550

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 **Date:** 30.05.2016

## Aggregate Impact Value
IS: 2386 Part IV

| | |
|---|---|
| Client | **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore. |
| Agency | **Technical Manager (west),** KRIDL, Bangalore. |
| Name of the Work | Asphalting to Main and Cross roads SMR Layout Thammish Garden, Venkateshwara Layout in Ward No.12, of Shettyhalli, BBMP, Bangalore. |
| Type of Mix | Wet Mix macadam |
| Date of Testing | 30.05.2016 |

| Sl No. | Details | Trial No. 1 | 2 | 3 | Average |
|---|---|---|---|---|---|
| 1 | Total weight of aggregate sample filling the cylindrical measure = $W_1$ g | 382 | 379 | 380 | |
| 2 | Weight of agregate passing 2.36 mm sieve after the test = $W_2$ g | 90 | 88 | 89 | |
| 3 | Weight of aggregate retained 2.36 mm sieve after the test = $W_3$ g | 292 | 291 | 291 | |
| 4 | Aggregate Impact value = percent fines $100^* (W_2/W_1)$% | 23.56 | 23.22 | 23.42 | 23.40 |

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date : 30.05.2016

## ATTERBERG LIMITS TEST FOR WMM
## MORTH TABLE-400-11

Client : **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (west),** KRIDL, Bangalore.

Name of Work : Asphalting to Main and Cross roads SMR Layout Thammish Garden, Venkateshwara Layout in Ward No.12, of Shettyhalli, BBMP, Bangalore.

Date of Testing : 30.05.2016

Material Type : Wet Mix Macadam

As per MORTH Table 400-13

| Sl. No. | Particulars | Test Results | Standards as per Specifications |
|---|---|---|---|
| 1 | Liquid Limit | 23.00 | |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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For CIVIL QUALITY CONSULTANTS & ENGINEERS

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ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು.

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date: 03.06.2016

## TEST REPORT

| | | |
|---|---|---|
| Client | : | **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore. |
| Agency | : | **Technical Manager (west),** KRIDL, Bangalore. |
| Name of the work | : | Asphalting to Main and Cross roads SMR Layout Thammish Garden, Venkateshwara Layout in Ward No.12, of Shettyhalli, BBMP, Bangalore. |
| Source of location | : | Hot mix Plant, Bangalore |
| Date of testing | : | 03.06.2016 |

The results of the tests conducted on the bitumen sample using for Bituminous Macadam

| Sl. No | Description | Test Result | Requirement as per IS:73:2013 |
|---|---|---|---|
| 1 | Penetration at 25 °C, 1/10 mm | 65 | 60 to 70 |
| 2 | Softening point, °C | 52 | Min. 45 |
| 3 | Ductility at 27°C, cm | 100 > | Min. 75 |
| 4 | Flash Point, °C | 326 | Min. 220 |

Note:

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For CIVIL QUALITY CONSULTANTS & ENGINEERS

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ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, [illegible]
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date: 03.06.2016

## Aggregate Impact Value

IS: 2386 Part IV

| | |
|---|---|
| Client | **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore. |
| Agency | **Technical Manager (west),** KRIDL, Bangalore. |
| Name of the Work | Asphalting to Main and Cross roads SMR Layout Thammish Garden, Venkateshwara Layout in Ward No.12, of Shettyhalli, BBMP, Bangalore. |
| Source / Location | Hotmix Plant, Bangalore |
| Type of Mix | Bituminous Macadam |
| Date of Testing | 03.06.2016 |

| Sl No. | Details | Trial No. 1 | Trial No. 2 | Trial No. 3 | Average |
|---|---|---|---|---|---|
| 1 | Total weight of aggregate sample filling the cylindrical measure = $W_1$ g | 372 | 374 | 376 | |
| 2 | Weight of agregate passing 2.36 mm sieve after the test = $W_2$ g | 89 | 87 | 88 | |
| 3 | Weight of aggregate retained 2.36 mm sieve after the test = $W_3$ g | 283 | 287 | 288 | |
| 4 | Aggregate Impact value = percent fines | 23.92 | 23.26 | 23.40 | |
| | $100 * (W_2/W_1)$ % | | | | 23.53 |

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30 %

Note:

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date: 04.06.2017

## BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX

AASHTO T 164 & AASHTO T 30

| | |
|---|---|
| CLIENT | **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, |
| AGENCY | **Technical Manager (west),** KRIDL, Bangalore. |
| NAME OF THE WORK | Asphalting to Main and Cross roads SMR Layout Thammish Garden, Venkateshwara Layout in Ward No.12, of Shettyhalli, BBMP, Bangalore. |
| SAMPLE I/D | Sample Supplied by Agency |
| DATE OF TESTING | 04.06.2017 |

### BITUMEN CONTENT DETERMINATION

| Description | Trail 1 | Trail 2 |
|---|---|---|
| 1. Weight of Mixture before Test, g | 500 | 500 |
| 2. Weight of Mixture after Test, g | 483.5 | 483 |
| 3. Weight of Asphalt and Mineral matter Extracted, | - | - |
| 4. Weight of Mineral Matter, g. | - | - |
| 5. Weight of Ash, g | | |
| 6. Weight of Bitumen Extracted, g. (corrected) | 16.5 | 17.00 |
| 7. Bitumen content in % | 3.30 | 3.40 |
| 8. Average | 3.35 | |

### GRADATION AFTER EXTRACTION

| SIEVE SIZE | Trail 1 | | | | JOBMIX |
|---|---|---|---|---|---|
| mm | Weight Retained, gm | % Retained | %Cummulative Retained | % Passing | Gradation |
| 26.5 | 0 | 0 | 0 | 100 | 100 |
| 19 | 32.51 | 6.72 | 6.72 | 93.28 | 90-100 |
| 13.2 | 146.2 | 30.24 | 36.96 | 63.04 | 56-88 |
| 4.75 | 172.4 | 35.66 | 72.62 | 27.38 | 16-36 |
| 2.36 | 62.5 | 12.93 | 85.54 | 14.46 | 4-19 |
| 0.3 | 33.8 | 7.00 | 92.54 | 7.46 | 2-10 |
| 0.075 | 12.6 | 2.61 | 95.15 | 4.85 | 0-8 |

| SIEVE SIZE | Trail 2 | | | | JOBMIX |
|---|---|---|---|---|---|
| mm | Weight Retained, gm | % Retained | %Cummulative Retained | % Passing | Gradation |
| 26.5 | 0 | 0 | 0 | 100 | 100 |
| 19 | 26.51 | 5.30 | 5.30 | 94.70 | 90-100 |
| 13.2 | 134.25 | 26.85 | 32.15 | 67.85 | 56-88 |
| 4.75 | 184.02 | 36.80 | 68.96 | 31.04 | 16-36 |
| 2.36 | 96.21 | 19.24 | 88.20 | 11.80 | 4-19 |
| 0.3 | 26.74 | 5.35 | 93.55 | 6.45 | 2-10 |
| 0.075 | 6.85 | 1.37 | 94.92 | 5.08 | 0-8 |

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